



EBERLINE

SERVICES

July 10, 2006

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R6-05-137-7446, SDG H3417

Dear Mr. Trent:

Enclosed is the data report for seven solid (soil) samples designated under SAF No. F06-005 received at Eberline Services on May 16, 2006. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/hjv

Enclosure: Data Package



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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3417 was composed of seven solid (soil) samples designated under SAF No. F06-005 with a Project Designation of: 216-Z-9 Trench Slant Characterization Borehole-Soil.

Due to the high activity of individual samples small sample aliquots were taken as needed; the QC samples were scaled accordingly. The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analysis

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

REVISED
D. Ayres
8/9/06


D. Ayres
00000002 8/9/06

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



Melissa C. Mannion
Senior Program Manager



Date

EBRLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

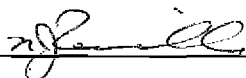
SDG 7446
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3417

S U M M A R Y D A T A S E C T I O N

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Prepared by



Reviewed by



Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3417

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3417

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3417

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF	
				SAMPLR ID	SAF NO	CUSTODY	COLLECTED
B1HK42	C3427, Slant, I-18	SOLID		R605137-03	F06-005	F06-005-040	04/13/06 09:15
B1HK47	C3427, Slant, I-19	SOLID		R605137-04	F06-005	F06-005-048	04/06/06 08:50
B1HK52	C3427, Slant, I-21	SOLID		R605137-05	F06-005	F06-005-056	04/04/06 09:15
B1HK57	C3427, Slant, I-22	SOLID		R605137-06	F06-005	F06-005-056	04/18/06 10:25
B1HK77	C3427, Slant, I-26	SOLID		R605137-07	F06-005	F06-005-096	05/03/06 13:10
B1HL22	C3427, Slant, I-19-D	SOLID		R605137-01	F06-005	F06-005-164	04/06/06 08:50
B1HL26	C3427, Slant, I-26-S	SOLID		R605137-02	F06-005	F06-005-170	05/03/06 13:10
Method Blank		SOLID		R604004-04	F06-005		
Method Blank		SOLID		R605137-09	F06-005		
Lab Control Sample		SOLID		R604004-03	F06-005		
Lab Control Sample		SOLID		R605137-08	F06-005		
Duplicate (R605137-04)	C3427, Slant, I-19	SOLID		R605137-10	F06-005		04/06/06 08:50
Duplicate (R605137-04)	C3427, Slant, I-19	SOLID		R605137-11	F06-005		04/06/06 08:50

SAMPLE SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3417

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7409		Method Blank	SOLID					R604004-04	7409-004
		Lab Control Sample	SOLID					R604004-03	7409-003
7446	F06-005-040	B1HK42	SOLID	96.4	131 g		05/16/06 33	R605137-03	7446-003
	F06-005-048	B1HK47	SOLID	95.9	138 g		05/16/06 40	R605137-04	7446-004
	F06-005-056	B1HK52	SOLID	93.5	117 g		05/16/06 42	R605137-05	7446-005
		B1HK57	SOLID	91.0	251 g		05/16/06 28	R605137-06	7446-006
	F06-005-096	B1HK77	SOLID	94.6	307 g		05/16/06 13	R605137-07	7446-007
	F06-005-164	B1HL22	SOLID	92.4	109 g		05/16/06 40	R605137-01	7446-001
	F06-005-170	B1HL26	SOLID	94.3	705 g		05/16/06 13	R605137-02	7446-002
		Method Blank	SOLID					R605137-09	7446-009
		Lab Control Sample	SOLID					R605137-08	7446-008
		Duplicate (R605137-04)	SOLID	95.9	138 g		05/16/06 40	R605137-10	7446-010
		Duplicate (R605137-04)	SOLID	95.9	138 g		05/16/06 40	R605137-11	7446-011

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3417

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2 σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Solids	7131-147	5.0	5			1	1	1/1	
NP	SOLID	Neptunium in Solids	7131-147	5.0	6			1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	7131-147	5.0	5			1	1	1/1	
TH	SOLID	Thorium, Isotopic in Solids	7131-147	5.0	6			1	1	1/1	
U	SOLID	Uranium, Isotopic in Solids	7131-147	5.0	5			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Solids	7131-147	10.0	6			1	1	1/1	
TC	SOLID	Technetium 99 in Solids	7131-128	10.0	6			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	7131-147	15.0	7			1	1	1/1	
Liquid Scintillation Counting											
H	SOLID	Tritium in Solids	7131-147	10.0	6			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3417

CLIENT SAMPLE ID		LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED			SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD		
BLHK42		R605137-03	7446-003	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
C3427, Slant, I-18	SOLID	04/13/06	7446-003	GAM		06/09/06	06/26/06	CSS	Gamma Scan		
F06-005-040	F06-005	05/16/06	7446-003	H		06/02/06	06/15/06	MWT	Tritium in Solids		
			7446-003	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-003	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-003	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-003	TC		06/15/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-003	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
			7446-003	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
BLHK47		R605137-04	7446-004	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
C3427, Slant, I-19	SOLID	04/06/06	7446-004	GAM		06/12/06	06/26/06	CSS	Gamma Scan		
F06-005-048	F06-005	05/16/06	7446-004	H		06/02/06	06/15/06	MWT	Tritium in Solids		
			7446-004	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-004	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-004	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-004	TC		06/15/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-004	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
			7446-004	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
BLHK52		R605137-05	7446-005	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
C3427, Slant, I-21	SOLID	04/04/06	7446-005	GAM		06/12/06	06/26/06	CSS	Gamma Scan		
F06-005-056	F06-005	05/16/06	7446-005	H		06/02/06	06/15/06	MWT	Tritium in Solids		
			7446-005	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-005	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-005	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-005	TC		06/12/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-005	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
			7446-005	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
BLHK57		R605137-06	7446-006	GAM		06/13/06	06/26/06	CSS	Gamma Scan		
C3427, Slant, I-22	SOLID	04/18/06	7446-006	H		06/02/06	06/15/06	MWT	Tritium in Solids		
F06-005-056	F06-005	05/16/06	7446-006	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-006	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-006	TC		06/12/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-006	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		

WORK SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3417

CLIENT SAMPLE ID		LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED			SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD		
BIHK77		R605137-07	7446-007	GAM		06/14/06	06/26/06	CSS	Gamma Scan		
C3427, Slant, I-26	SOLID	05/03/06	7446-007	H		06/02/06	06/15/06	MWT	Tritium in Solids		
F06-005-096	F06-005	05/16/06	7446-007	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-007	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-007	TC		06/13/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-007	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
BIHL22		R605137-01	7446-001	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
C3427, Slant, I-19-D	SOLID	04/06/06	7446-001	GAM		06/09/06	06/26/06	CSS	Gamma Scan		
F06-005-164	F06-005	05/16/06	7446-001	H		06/02/06	06/15/06	MWT	Tritium in Solids		
			7446-001	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-001	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-001	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-001	TC		06/15/06	06/19/06	MWT	Technetium 99 in Solids		
			7446-001	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
			7446-001	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
BIHL26		R605137-02	7446-002	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
C3427, Slant, I-26-S	SOLID	05/03/06	7446-002	GAM		06/14/06	06/26/06	CSS	Gamma Scan		
F06-005-170	F06-005	05/16/06	7446-002	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-002	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
Method Blank		R604004-04	7409-004	TC		06/10/06	07/03/06	MWT	Technetium 99 in Solids		
	SOLID										
	F06-005										
Method Blank		R605137-09	7446-009	AM		06/13/06	06/16/06	BW	Americium 241 in Solids		
	SOLID		7446-009	GAM		06/09/06	06/26/06	CSS	Gamma Scan		
	F06-005		7446-009	H		06/02/06	06/15/06	MWT	Tritium in Solids		
			7446-009	NP		06/14/06	06/15/06	MWT	Neptunium in Solids		
			7446-009	PU		06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids		
			7446-009	SR		06/13/06	06/19/06	MWT	Total Strontium in Solids		
			7446-009	TH		06/16/06	06/21/06	BW	Thorium, Isotopic in Solids		
			7446-009	U		06/15/06	06/19/06	BW	Uranium, Isotopic in Solids		
Lab Control Sample		R604004-03	7409-003	TC		06/10/06	07/03/06	MWT	Technetium 99 in Solids		
	SOLID										
	F06-005										

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H3417

CLIENT SAMPLE ID	MATRIX	LAB SAMPLE ID	COLLECTED	SUF-	ANALYZED	REVIEWED	BY	METHOD
LOCATION		RECEIVED	PLANCHET	TEST	FIX			
CUSTODY	SAF No							
Lab Control Sample		R605137-08	7446-008	AM	06/13/06	06/16/06	BW	Americium 241 in Solids
	SOLID		7446-008	GAM	06/19/06	06/26/06	CSS	Gamma Scan
	F06-005		7446-008	H	06/02/06	06/15/06	MWT	Tritium in Solids
			7446-008	NP	06/14/06	06/15/06	MWT	Neptunium in Solids
			7446-008	PU	06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids
			7446-008	SR	06/13/06	06/19/06	MWT	Total Strontium in Solids
			7446-008	TH	06/16/06	06/21/06	BW	Thorium, Isotopic in Solids
			7446-008	U	06/15/06	06/19/06	BW	Uranium, Isotopic in Solids
Duplicate (R605137-04)		R605137-10	7446-010	AM	06/13/06	06/16/06	BW	Americium 241 in Solids
C3427, Slant, I-19	SOLID	04/06/06	7446-010	H	06/02/06	06/15/06	MWT	Tritium in Solids
	F06-005	05/16/06	7446-010	NP	06/14/06	06/15/06	MWT	Neptunium in Solids
			7446-010	PU	06/15/06	06/19/06	BW	Plutonium, Isotopic in Solids
			7446-010	SR	06/13/06	06/19/06	MWT	Total Strontium in Solids
			7446-010	TC	06/12/06	06/19/06	MWT	Technetium 99 in Solids
			7446-010	TH	06/16/06	06/21/06	BW	Thorium, Isotopic in Solids
			7446-010	U	06/15/06	06/19/06	BW	Uranium, Isotopic in Solids
Duplicate (R605137-04)		R605137-11	7446-011	GAM	06/14/06	06/26/06	CSS	Gamma Scan
C3427, Slant, I-19	SOLID	04/06/06						
	F06-005	05/16/06						

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F06-005	Americium 241 in Solids	AMCMISO_1E_PLATE_AEA	5			1	1	1	8
GAM	F06-005	Gamma Scan	GAMMA_GS	7			1	1	1	10
H	F06-005	Tritium in Solids	TRITIUM_COX_LSC	6			1	1	1	9
NP	F06-005	Neptunium in Solids	NP237_LLE_PLATE_AEA	6			1	1	1	9
PU	F06-005	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	5			1	1	1	8
SR	F06-005	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	6			1	1	1	9
TC	F06-005	Technetium 99 in Solids	TC99_TR_SEP_GPC	6			1	1	1	9
TH	F06-005	Thorium, Isotopic in Solids	THISO_1E_PLATE_AEA	6			1	1	1	9
U	F06-005	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	5			1	1	1	8
TOTALS				52			9	9	9	79

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

R604004-04

Method Blank

METHOD BLANK

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604004-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7409-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F06-005</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	N.A.			400		H
Total Strontium	SR-RAD	N.A.			1.0		SR
Americium 241	14596-10-2	N.A.			1.0		AM
Technetium 99	14133-76-7	-1.90	17	<u>55</u>	15	U	TC
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Uranium 233/234	U-233/234	N.A.			1.0		U
Uranium 235	15117-96-1	N.A.			1.0		U
Uranium 238	U-238	N.A.			1.0		U
Neptunium 237	13994-20-2	N.A.			1.0		NP
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU

216Z9 Trnch.Slant Charact.Brhle-Soil

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Version <u>Ver 1.0</u>
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-09

Method Blank

METHOD BLANK

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-09</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7446-009</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F06-005</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.029	9.0	15	400	U	H
Total Strontium	SR-RAD	168	1300	2700	1.0	U	SR
Americium 241	14596-10-2	22.7	230	450	1.0	U	AM
Thorium 228	14274-82-9	98.9	400	760	1.0	U	TH
Thorium 230	14269-63-7	394	590	750	1.0	U	TH
Thorium 232	TH-232	0	200	750	1.0	U	TH
Uranium 233/234	U-233/234	0	110	220	1.0	U	U
Uranium 235	15117-96-1	-34.6	69	260	1.0	U	U
Uranium 238	U-238	0	57	220	1.0	U	U
Neptunium 237	13994-20-2	0	320	470	1.0	U	NP
Plutonium 238	13981-16-3	-498	360	640	1.0	U	PU
Plutonium 239/240	PU-239/240	22.6	91	170	1.0	U	PU
Potassium 40	13966-00-2	U		200		U	GAM
Cobalt 60	10198-40-0	U		8.6	0.050	U	GAM
Cesium 137	10045-97-3	U		7.7	0.10	U	GAM
Radium 226	13982-63-3	U		15	0.10	U	GAM
Radium 228	15262-20-1	U		35	0.20	U	GAM
Europium 152	14683-23-9	U		16	0.10	U	GAM
Europium 154	15585-10-1	U		22	0.10	U	GAM
Europium 155	14391-16-3	U		17	0.10	U	GAM
Thorium 228	14274-82-9	U		9.0		U	GAM
Thorium 232	TH-232	U		35		U	GAM
Uranium 235	15117-96-1	U		26		U	GAM
Uranium 238	U-238	U		830		U	GAM
Americium 241	14596-10-2	U		20		U	GAM
Antimony 125	14234-35-6	U		14		U	GAM
Cesium 134	13967-70-9	U		8.2		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

METHOD BLANKS

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-09

Method Blank

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SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R605137-09</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7446-009</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F06-005</u>	

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Report date <u>07/10/06</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

R604004-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R604004-03</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7409-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F06-005</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	N.A.			400		H					80-120
Total Strontium	N.A.			1.0		SR					80-120
Americium 241	N.A.			1.0		AM					80-120
Technetium 99	12600	320	<u>58</u>	15		TC	12000	480	105	83-117	80-120
Thorium 230	N.A.			1.0		TH					80-120
Uranium 233/234	N.A.			1.0		U					80-120
Uranium 235	N.A.			1.0		U					80-120
Uranium 238	N.A.			1.0		U					80-120
Neptunium 237	N.A.			1.0		NP					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120

21629 Trnch.Slant Charact.Brzhle-Soil

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LAB CONTROL SAMPLES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-08</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7446-008</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F06-005</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	4360	100	32	400		H	4570	180	95	84-116	80-120
Total Strontium	108000	6200	<u>2600</u>	1.0		SR	97700	3900	110	80-120	80-120
Americium 241	116000	5800	<u>510</u>	1.0		AM	112000	4500	104	87-113	80-120
Thorium 230	97400	10000	<u>700</u>	1.0		TH	101000	4000	96	82-118	80-120
Uranium 233/234	91200	3600	<u>1600</u>	1.0		U	92900	3700	98	89-111	80-120
Uranium 235	75900	3100	<u>140</u>	1.0		U	75500	3000	100	89-111	80-120
Uranium 238	94600	3600	<u>1500</u>	1.0		U	101000	4000	94	89-111	80-120
Neptunium 237	102000	8600	<u>490</u>	1.0		NP	99200	4000	103	84-116	80-120
Plutonium 238	126000	5600	<u>650</u>	1.0		PU	131000	5200	96	89-111	80-120
Plutonium 239/240	138000	6100	<u>150</u>	1.0		PU	145000	5800	95	89-111	80-120
Cobalt 60	240	17	<u>9.0</u>	0.050		GAM	233	9.3	103	74-126	80-120
Cesium 137	242	14	<u>11</u>	0.10		GAM	245	9.8	99	75-125	80-120

21629 Trench.Slant Charact.Brhle-Soil

QC-LCS 57291

LAB CONTROL SAMPLES

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Lab id EBERLINE
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 Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-10

B1HK47

DUPLICATE

SDG <u>7446</u>		Client/Case no <u>Hanford</u> SDG <u>H3417</u>	
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>R605137-10</u>	Lab sample id <u>R605137-04</u>	Client sample id <u>B1HK47</u>	
Dept sample id <u>7446-010</u>	Dept sample id <u>7446-004</u>	Location/Matrix <u>C3427, Slant, I-19</u> <u>SOLID</u>	
	Received <u>05/16/06</u>	Collected/Weight <u>04/06/06 08:50</u> <u>138 g</u>	
% solids <u>95.9</u>	% solids <u>95.9</u>	Custody/SAP No <u>F06-005-048</u> <u>F06-005</u>	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
Tritium	7.03	9.3	15	400	U	H	5.58	10	15	U	-	0.2	
Total Strontium	-482	530	1100	1.0	U	SR	-662	590	1400	U	-	0.5	
Americium 241	64400	2900	220	1.0		AM	67600	3400	260		5	15	1.0
Technetium 99	12.5	7.8	26	15	U	TC	7.61	8.5	26	U	-	0.8	
Thorium 228	0	110	400	1.0	U	TH	0	120	470	U	-	0	
Thorium 230	52.7	210	400	1.0	U	TH	-61.4	250	470	U	-	0.7	
Thorium 232	52.7	110	400	1.0	U	TH	0	120	470	U	-	0.6	
Uranium 233/234	44.5	67	120	1.0	U	U	10.1	40	77	U	-	0.9	
Uranium 235	13.5	27	100	1.0	U	U	-24.4	49	120	U	-	1.4	
Uranium 238	22.2	44	85	1.0	U	U	-10.1	20	77	U	-	1.3	
Neptunium 237	79.3	160	240	1.0	U	NP	0	150	230	U	-	0.7	
Plutonium 238	-144	230	380	1.0	U	PU	15.2	170	290	U	-	1.1	
Plutonium 239/240	9460	860	110	1.0		PU	9330	610	58		1	20	0.2

216Z9 Trnch.Slant Charact.Brhle-Soil

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Version <u>Ver 1.0</u>
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Report date <u>07/10/06</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-11

B1HK47

DUPLICATE

SDG 7446	Client/Case no Hanford	SDG H3417
Contact Melissa C. Mannion	Contract No. 630	
DUPLICATE	ORIGINAL	
Lab sample id R605137-11	Lab sample id R605137-04	Client sample id B1HK47
Dept sample id 7446-011	Dept sample id 7446-004	Location/Matrix C3427, Slant, I-19 SOLID
	Received 05/16/06	Collected/Weight 04/06/06 08:50 138 g
% solids 95.9	% solids 95.9	Custody/SAP No F06-005-048 F06-005

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
Potassium 40	24.8	3.6	1.2			GAM	15.0	3.5	1.3		49	50	3.0
Cobalt 60	U		0.15	0.050	U	GAM	U		0.13	U	-		0.2
Cesium 137	0.322	0.11	0.12	0.10		GAM	0.408	0.16	0.14		24	86	0.8
Radium 226	0.560	0.20	0.21	0.10		GAM	0.668	0.23	0.21		18	81	0.7
Radium 228	1.06	0.65	0.63	0.20		GAM	0.616	0.56	0.60		53	157	1.0
Europium 152	U		0.34	0.10	U	GAM	U		0.34	U	-		0
Europium 154	U		0.48	0.10	U	GAM	U		0.44	U	-		0.1
Europium 155	U		2.2	0.10	U	GAM	U		2.3	U	-		0.1
Thorium 232	0.774	0.15	0.17			GAM	0.870	0.21	0.23		12	57	0.6
Thorium 232	1.06	0.65	0.63			GAM	0.616	0.56	0.60		53	157	1.0
Uranium 235	U		0.65		U	GAM	U		0.65	U	-		0
Uranium 238	U		16		U	GAM	U		17	U	-		0.1
Americium 241	52200	30	15			GAM	51600	30	17		1	32	0.1
Antimony 125	U		0.26		U	GAM	U		0.27	U	-		0.1
Cesium 134	U		0.15		U	GAM	U		0.17	U	-		0.2

216Z9 Trnch.Slant Charact.Brhle-Soil

QC-DUP#4 57395

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Version 3.06
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-03

B1HK42

DATA SHEET

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R605137-03</u>	Client sample id <u>B1HK42</u>	
Dept sample id <u>7446-003</u>	Location/Matrix <u>C3427, Slant, I-18</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>04/13/06 09:15</u>	<u>131 g</u>
% solids <u>96.4</u>	Custody/SAF No <u>F06-005-040</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	4.07	12	14	400	U	H
Total Strontium	SR-RAD	-534	1100	<u>2500</u>	1.0	U	SR
Americium 241	14596-10-2	131000	7400	<u>540</u>	1.0		AM
Technetium 99	14133-76-7	-4.77	6.7	<u>18</u>	15	U	TC
Thorium 228	14274-82-9	-20.0	46	<u>82</u>	1.0	U	TH
Thorium 230	14269-63-7	-48.5	210	<u>460</u>	1.0	U	TH
Thorium 232	TH-232	-17.1	46	<u>100</u>	1.0	U	TH
Uranium 233/234	U-233/234	18.1	72	<u>140</u>	1.0	U	U
Uranium 235	15117-96-1	-21.9	44	<u>170</u>	1.0	U	U
Uranium 238	U-238	18.1	72	<u>140</u>	1.0	U	U
Neptunium 237	13994-20-2	0	330	<u>490</u>	1.0	U	NP
Plutonium 238	13981-16-3	0	470	<u>720</u>	1.0	U	PU
Plutonium 239/240	PU-239/240	9060	950	<u>200</u>	1.0		PU
Potassium 40	13966-00-2	29.4	5.0	<u>2.1</u>			GAM
Cobalt 60	10198-40-0	U		<u>0.25</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.396	0.28	<u>0.29</u>	0.10		GAM
Radium 226	13982-63-3	0.742	0.44	<u>0.54</u>	0.10		GAM
Radium 228	15262-20-1	1.36	1.1	<u>1.2</u>	0.20		GAM
Europium 152	14683-23-9	U		<u>0.78</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.81</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>16</u>	0.10	U	GAM
Thorium 228	14274-82-9	1.48	0.54	<u>0.63</u>			GAM
Thorium 232	TH-232	1.36	1.1	<u>1.2</u>			GAM
Uranium 235	15117-96-1	U		<u>5.7</u>		U	GAM
Uranium 238	U-238	U		<u>27</u>		U	GAM
Americium 241	14596-10-2	60100	30	<u>11</u>			GAM
Antimony 125	14234-35-6	U		<u>0.53</u>		U	GAM
Cesium 134	13967-70-9	U		<u>0.35</u>		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-04

B1HK47

D A T A S H E E T

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-04</u>	Client sample id <u>B1HK47</u>	
Dept sample id <u>7446-004</u>	Location/Matrix <u>C3427, Slant, I-19</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>04/06/06 08:50</u>	<u>138 g</u>
% solids <u>95.9</u>	Custody/SAF No <u>F06-005-048</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	5.58	10	15	400	U	H
Total Strontium	SR-RAD	-662	590	1400	1.0	U	SR
Americium 241	14596-10-2	67600	3400	260	1.0		AM
Technetium 99	14133-76-7	7.61	8.5	26	15	U	TC
Thorium 228	14274-82-9	0	120	470	1.0	U	TH
Thorium 230	14269-63-7	-61.4	250	470	1.0	U	TH
Thorium 232	TH-232	0	120	470	1.0	U	TH
Uranium 233/234	U-233/234	10.1	40	77	1.0	U	U
Uranium 235	15117-96-1	-24.4	49	120	1.0	U	U
Uranium 238	U-238	-10.1	20	77	1.0	U	U
Neptunium 237	13994-20-2	0	150	230	1.0	U	NP
Plutonium 238	13981-16-3	15.2	170	290	1.0	U	PU
Plutonium 239/240	PU-239/240	9330	610	58	1.0		PU
Potassium 40	13966-00-2	15.0	3.5	1.3			GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Cesium 137	10045-97-3	0.408	0.16	0.14	0.10		GAM
Radium 226	13982-63-3	0.668	0.23	0.21	0.10		GAM
Radium 228	15262-20-1	0.616	0.56	0.60	0.20		GAM
Europium 152	14683-23-9	U		0.34	0.10	U	GAM
Europium 154	15585-10-1	U		0.44	0.10	U	GAM
Europium 155	14391-16-3	U		2.3	0.10	U	GAM
Thorium 228	14274-82-9	0.870	0.21	0.23			GAM
Thorium 232	TH-232	0.616	0.56	0.60			GAM
Uranium 235	15117-96-1	U		0.65		U	GAM
Uranium 238	U-238	U		17		U	GAM
Americium 241	14596-10-2	51600	30	17			GAM
Antimony 125	14234-35-6	U		0.27		U	GAM
Cesium 134	13967-70-9	U		0.17		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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Lab id	<u>EBRLNE</u>
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-05

B1HK52

DATA SHEET

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-05</u>	Client sample id <u>B1HK52</u>	
Dept sample id <u>7446-005</u>	Location/Matrix <u>C3427, Slant, I-21</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>04/04/06 09:15</u>	<u>117 g</u>
% solids <u>93.5</u>	Custody/SAF No <u>F06-005-056</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-3.22	14	17	400	U	H
Total Strontium	SR-RAD	-77.2	670	<u>1400</u>	1.0	U	SR
Americium 241	14596-10-2	78300	3400	<u>210</u>	1.0		AM
Technetium 99	14133-76-7	22.1	6.8	<u>17</u>	15		TC
Thorium 228	14274-82-9	-58.1	120	<u>440</u>	1.0	U	TH
Thorium 230	14269-63-7	-57.9	230	<u>440</u>	1.0	U	TH
Thorium 232	TH-232	57.9	120	<u>440</u>	1.0	U	TH
Uranium 233/234	U-233/234	-17.8	36	<u>85</u>	1.0	U	U
Uranium 235	15117-96-1	21.6	43	<u>83</u>	1.0	U	U
Uranium 238	U-238	-17.8	36	<u>85</u>	1.0	U	U
Neptunium 237	13994-20-2	90.2	180	<u>270</u>	1.0	U	NP
Plutonium 238	13981-16-3	262	210	<u>300</u>	1.0	U	PU
Plutonium 239/240	PU-239/240	19000	1100	<u>120</u>	1.0		PU
Potassium 40	13966-00-2	21.3	4.4	<u>1.7</u>			GAM
Cobalt 60	10198-40-0	U		<u>0.17</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.325	0.15	<u>0.17</u>	0.10		GAM
Radium 226	13982-63-3	0.487	0.32	<u>0.32</u>	0.10		GAM
Radium 228	15262-20-1	0.700	0.66	<u>0.69</u>	0.20		GAM
Europium 152	14683-23-9	U		<u>0.45</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.53</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>2.7</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.924	0.18	<u>0.20</u>			GAM
Thorium 232	TH-232	0.700	0.66	<u>0.69</u>			GAM
Uranium 235	15117-96-1	U		<u>0.80</u>		U	GAM
Uranium 238	U-238	U		<u>17</u>		U	GAM
Americium 241	14596-10-2	60300	40	<u>20</u>			GAM
Antimony 125	14234-35-6	U		<u>0.34</u>		U	GAM
Cesium 134	13967-70-9	U		<u>0.20</u>		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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Report date <u>07/10/06</u>

00000022

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

R605137-06

B1HK57

DATA SHEET

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R605137-06</u>	Client sample id <u>B1HK57</u>	
Dept sample id <u>7446-006</u>	Location/Matrix <u>C3427, Slant, I-22</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>04/18/06 10:25</u>	<u>251 g</u>
% solids <u>91.0</u>	Custody/SAF No <u>F06-005-056</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.249	1.7	2.9	400	U	H
Total Strontium	SR-RAD	0.657	1.4	2.8	1.0	U	SR
Technetium 99	14133-76-7	0.823	1.2	2.8	15	U	TC
Thorium 228	14274-82-9	0.923	0.70	0.88	1.0		TH
Thorium 230	14269-63-7	0.460	0.69	0.88	1.0	U	TH
Thorium 232	TH-232	1.50	0.93	0.88	1.0		TH
Neptunium 237	13994-20-2	10.5	1.3	0.38	1.0		NP
Potassium 40	13966-00-2	U		65		U	GAM
Cobalt 60	10198-40-0	U		2.9	0.050	U	GAM
Cesium 137	10045-97-3	U		2.1	0.10	U	GAM
Radium 226	13982-63-3	U		4.3	0.10	U	GAM
Radium 228	15262-20-1	U		21	0.20	U	GAM
Europium 152	14683-23-9	U		6.0	0.10	U	GAM
Europium 154	15585-10-1	U		8.5	0.10	U	GAM
Europium 155	14391-16-3	U		5.0	0.10	U	GAM
Thorium 228	14274-82-9	U		3.3		U	GAM
Thorium 232	TH-232	U		21		U	GAM
Uranium 235	15117-96-1	U		7.2		U	GAM
Uranium 238	U-238	U		350		U	GAM
Americium 241	14596-10-2	323	15	12			GAM
Antimony 125	14234-35-6	U		5.3		U	GAM
Cesium 134	13967-70-9	U		2.6		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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Lab id <u>EBRLNE</u>
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Report date <u>07/10/06</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-07

B1HK77

DATA SHEET

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R605137-07</u>	Client sample id <u>B1HK77</u>	
Dept sample id <u>7446-007</u>	Location/Matrix <u>C3427, Slant, I-26</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>05/03/06 13:10</u>	<u>307 g</u>
% solids <u>94.6</u>	Custody/SAF No <u>F06-005-096</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.016	1.8	3.0	400	U	H
Total Strontium	SR-RAD	-0.700	14	28	1.0	U	SR
Technetium 99	14133-76-7	0.567	1.5	4.6	15	U	TC
Thorium 228	14274-82-9	2.13	4.3	8.1	1.0	U	TH
Thorium 230	14269-63-7	2.12	6.4	8.1	1.0	U	TH
Thorium 232	TH-232	0	2.1	8.1	1.0	U	TH
Neptunium 237	13994-20-2	1.89	7.5	14	1.0	U	NP
Potassium 40	13966-00-2	25.8	18	14			GAM
Cobalt 60	10198-40-0	U		1.7	0.050	U	GAM
Cesium 137	10045-97-3	U		1.9	0.10	U	GAM
Radium 226	13982-63-3	U		2.8	0.10	U	GAM
Radium 228	15262-20-1	U		9.0	0.20	U	GAM
Europium 152	14683-23-9	U		4.2	0.10	U	GAM
Europium 154	15585-10-1	U		5.8	0.10	U	GAM
Europium 155	14391-16-3	U		3.5	0.10	U	GAM
Thorium 228	14274-82-9	U		2.2		U	GAM
Thorium 232	TH-232	U		9.0		U	GAM
Uranium 235	15117-96-1	U		4.7		U	GAM
Uranium 238	U-238	U		220		U	GAM
Americium 241	14596-10-2	1510	24	17			GAM
Antimony 125	14234-35-6	U		3.3		U	GAM
Cesium 134	13967-70-9	U		2.1		U	GAM

21629 Trnch.Slant Charact.Brhle-Soil

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
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Report date <u>07/10/06</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-01

B1HL22

D A T A S H E E T

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-01</u>	Client sample id <u>B1HL22</u>	
Dept sample id <u>7446-001</u>	Location/Matrix <u>C3427, Slant, I-19-D</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>04/06/06 08:50</u>	<u>109 g</u>
% solids <u>92.4</u>	Custody/SAF No <u>F06-005-164</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	9.19	9.0	15	400	U	H
Total Strontium	SR-RAD	-269	640	1400	1.0	U	SR
Americium 241	14596-10-2	68300	4200	360	1.0		AM
Technetium 99	14133-76-7	2.15	8.5	26	15	U	TC
Thorium 228	14274-82-9	-13.0	26	46	1.0	U	TH
Thorium 230	14269-63-7	27.4	110	230	1.0	U	TH
Thorium 232	TH-232	-17.3	23	53	1.0	U	TH
Uranium 233/234	U-233/234	8.88	53	110	1.0	U	U
Uranium 235	15117-96-1	-10.8	22	82	1.0	U	U
Uranium 238	U-238	-17.8	36	85	1.0	U	U
Neptunium 237	13994-20-2	78.1	160	230	1.0	U	NP
Plutonium 238	13981-16-3	-218	190	330	1.0	U	PU
Plutonium 239/240	PU-239/240	9120	810	100	1.0		PU
Potassium 40	13966-00-2	21.9	5.0	1.8			GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Cesium 137	10045-97-3	0.291	0.16	0.17	0.10		GAM
Radium 226	13982-63-3	0.642	0.29	0.27	0.10		GAM
Radium 228	15262-20-1	0.770	0.60	0.67	0.20		GAM
Europium 152	14683-23-9	U		0.41	0.10	U	GAM
Europium 154	15585-10-1	U		0.50	0.10	U	GAM
Europium 155	14391-16-3	U		3.2	0.10	U	GAM
Thorium 228	14274-82-9	0.970	0.29	0.29			GAM
Thorium 232	TH-232	0.770	0.60	0.67			GAM
Uranium 235	15117-96-1	U		0.74		U	GAM
Uranium 238	U-238	U		19		U	GAM
Americium 241	14596-10-2	56600	40	18			GAM
Antimony 125	14234-35-6	U		0.35		U	GAM
Cesium 134	13967-70-9	U		0.18		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3417

R605137-02

B1HL26

DATA SHEET

SDG <u>7446</u>	Client/Case no <u>Hanford</u>	SDG <u>H3417</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R605137-02</u>	Client sample id <u>B1HL26</u>	
Dept sample id <u>7446-002</u>	Location/Matrix <u>C3427, Slant, I-26-S</u>	<u>SOLID</u>
Received <u>05/16/06</u>	Collected/Weight <u>05/03/06 13:10</u>	<u>705 g</u>
% solids <u>94.3</u>	Custody/SAF No <u>F06-005-170</u>	<u>F06-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Americium 241	14596-10-2	1330	68	<u>4.8</u>	1.0		AM
Uranium 233/234	U-233/234	0.971	1.5	<u>2.3</u>	1.0	U	U
Uranium 235	15117-96-1	-0.294	0.59	<u>2.2</u>	1.0	U	U
Uranium 238	U-238	0.728	0.97	<u>1.9</u>	1.0	U	U
Plutonium 238	13981-16-3	<u>-5.23</u>	4.0	<u>7.8</u>	1.0	U	PU
Plutonium 239/240	PU-239/240	129	11	<u>1.5</u>	1.0		PU
Potassium 40	13966-00-2	U		20		U	GAM
Cobalt 60	10198-40-0	U		<u>2.2</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>1.3</u>	0.10	U	GAM
Radium 226	13982-63-3	U		<u>2.4</u>	0.10	U	GAM
Radium 228	15262-20-1	U		<u>7.2</u>	0.20	U	GAM
Europium 152	14683-23-9	U		<u>3.6</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>5.9</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>3.0</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		1.9		U	GAM
Thorium 232	TH-232	U		7.2		U	GAM
Uranium 235	15117-96-1	U		4.2		U	GAM
Uranium 238	U-238	U		180		U	GAM
Americium 241	14596-10-2	1070	18	9.6			GAM
Antimony 125	14234-35-6	U		3.6		U	GAM
Cesium 134	13967-70-9	U		1.9		U	GAM

216Z9 Trnch.Slant Charact.Brhle-Soil

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test AM Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Americium PLANCHET	241
Preparation batch 7131-147					
BIHK42	R605137-03	7446-003		131000	
BIHK47	R605137-04	7446-004		67600	
BIHK52	R605137-05	7446-005		78300	
BIHL22	R605137-01	7446-001		68300	
BIHL26	R605137-02	7446-002		1330	
Method Blank	R605137-09	7446-009		22.7	U
Lab Control Sample	R605137-08	7446-008		ok	
Duplicate (R605137-04)	R605137-10	7446-010		ok	

Nominal values and limits from method RDLs (pCi/g) 1.0
216Z9 Trnch.Slant Charact.Brhlle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7131-147 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 147																
BIHK42	R605137-03	540		1.0E-4				42		913			61	06/12/06	06/13	SS-063
BIHK47	R605137-04	260		2.0E-4				47		914			68	06/12/06	06/13	SS-064
BIHK52	R605137-05	210		2.0E-4				59		914			70	06/12/06	06/13	SS-066
BIHL22	R605137-01	360		2.0E-4				31		913			68	06/12/06	06/13	SS-061
BIHL26	R605137-02	4.8		0.0100				45		913			41	06/12/06	06/13	SS-062
Method Blank	R605137-09	450		1.0E-4				60		932				06/12/06	06/13	SS-028
Lab Control Sample	R605137-08	510		1.0E-4				46		932				06/12/06	06/13	SS-027
Duplicate (R605137-04)	R605137-10	220		2.0E-4				56		928			68	06/12/06	06/13	SS-029
Nominal values and limits from method				1.0	1.0E-4			20-105		100	100		180			

METHOD SUMMARIES

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Lab id EBRLINE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test AM Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES \pm 2 SD	MDA <u>320</u> \pm <u>360</u>
FOR 8 SAMPLES	YIELD <u>48</u> \pm <u>20</u>

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test NP Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Neptunium 237
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Preparation batch 7131-147

BIHK42	R605137-03	7446-003	U
BIHK47	R605137-04	7446-004	U
BIHK52	R605137-05	7446-005	90.2 U
BIHK57	R605137-06	7446-006	10.5
BIHK77	R605137-07	7446-007	1.89 U
BIHL22	R605137-01	7446-001	78.1 U
Method Blank	R605137-09	7446-009	U
Lab Control Sample	R605137-08	7446-008	ok
Duplicate (R605137-04)	R605137-10	7446-010	- U

Nominal values and limits from method RDLs (pCi/g) 1.0

21629 Trnch.Slant Charact.Brhle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7131-147 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 147

BIHK42	R605137-03	490	1.0E-4	55	142	62	06/13/06	06/14	SS-028
BIHK47	R605137-04	230	2.0E-4	60	142	69	06/13/06	06/14	SS-029
BIHK52	R605137-05	270	2.0E-4	52	142	71	06/13/06	06/14	SS-031
BIHK57	R605137-06	0.38	0.100	48	712	57	06/13/06	06/14	SS-065
BIHK77	R605137-07	14	0.0100	48	143	42	06/13/06	06/14	SS-033
BIHL22	R605137-01	230	2.0E-4	59	142	69	06/13/06	06/14	SS-027
Method Blank	R605137-09	470	1.0E-4	51	143	06/13/06	06/14	SS-034	
Lab Control Sample	R605137-08	490	1.0E-4	66	143	06/13/06	06/14	SS-034	
Duplicate (R605137-04)	R605137-10	240	2.0E-4	50	143	69	06/13/06	06/14	SS-036

Nominal values and limits from method 1.0 1.0E-4 20-105 100 180

METHOD SUMMARIES

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Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test NP Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

NEPTUNIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES \pm 2 SD	MDA <u>270</u> \pm <u>370</u>
FOR 9 SAMPLES	YIELD <u>54</u> \pm <u>12</u>

METHOD SUMMARIES

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Protocol Hanford

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test PU Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	PLANCHET	Plutonium 238	Plutonium 239/240
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Preparation batch 7131-147

BLHK42	R605137-03	7446-003	U	9060
BLHK47	R605137-04	7446-004	15.2 U	9330
BLHK52	R605137-05	7446-005	262 U	19000
BLHL22	R605137-01	7446-001	U	9120
BLHL26	R605137-02	7446-002	U	129
Method Blank	R605137-09	7446-009	U	22.6 U
Lab Control Sample	R605137-08	7446-008	ok	ok
Duplicate (R605137-04)	R605137-10	7446-010	- U	ok

Nominal values and limits from method	RDLs (pCi/g)	1.0	1.0
216Z9 Trnch.Slant Charact.Brhle-Soil			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7131-147 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 147

BLHK42	R605137-03	720	1.0E-4	55	959	63	06/14/06	06/15	SS-036
BLHK47	R605137-04	290	2.0E-4	79	959	70	06/14/06	06/15	SS-037
BLHK52	R605137-05	300	2.0E-4	67	959	72	06/14/06	06/15	SS-038
BLHL22	R605137-01	330	2.0E-4	54	962	70	06/14/06	06/15	SS-066
BLHL26	R605137-02	7.8	0.0100	60	958	43	06/14/06	06/15	SS-035
Method Blank	R605137-09	640	1.0E-4	62	960	06/14/06	06/15	SS-042	
Lab Control Sample	R605137-08	650	1.0E-4	79	959	06/14/06	06/15	SS-040	
Duplicate (R605137-04)	R605137-10	380	2.0E-4	45	998	70	06/14/06	06/15	SS-055

Nominal values and limits from method	1.0	1.0E-4	20-105	100	100	180
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METHOD SUMMARIES

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test PU Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	PUIISO_PLATE_AEA
	SPP-073	Soil Leaching 10-200 g Aliquot, rev 0
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES \pm 2 SD	MDA <u>410</u> \pm <u>480</u>
FOR 8 SAMPLES	YIELD <u>63</u> \pm <u>24</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test TH Matrix SOLID

SDG 7446

Contact Melissa C. Marnion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Thorium 230
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Preparation batch 7131-147

BLHK42	R605137-03	7446-003	U
BLHK47	R605137-04	7446-004	U
BLHK52	R605137-05	7446-005	U
BLHK57	R605137-06	7446-006	U
BLHK77	R605137-07	7446-007	2.12 U
BLHL22	R605137-01	7446-001	27.4 U
Method Blank	R605137-09	7446-009	394 U
Lab Control Sample	R605137-08	7446-008	ok
Duplicate (R605137-04)	R605137-10	7446-010	- U

Nominal values and limits from method RDLs (pCi/g) 1.0

216Z9 Trench.Slant Charact.Brhlle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MAX MDA g	ALIQ	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
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Preparation batch 7131-147 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 147

BLHK42	R605137-03	460	1.0E-4					88		5387			64	06/14/06	06/16	SS-062
BLHK47	R605137-04	470	2.0E-4					82		151			71	06/14/06	06/16	SS-063
BLHK52	R605137-05	440	2.0E-4					78		151			73	06/14/06	06/16	SS-064
BLHK57	R605137-06	0.88	0.100					81		151			59	06/14/06	06/16	SS-066
BLHK77	R605137-07	8.1	0.0100					81		151			44	06/14/06	06/16	SS-027
BLHL22	R605137-01	230	2.0E-4					87		5387			71	06/14/06	06/16	SS-061
Method Blank	R605137-09	760	1.0E-4					88		151				06/14/06	06/16	SS-029
Lab Control Sample	R605137-08	700	1.0E-4					92		151				06/14/06	06/16	SS-028
Duplicate (R605137-04)	R605137-10	400	2.0E-4					83		151			71	06/14/06	06/16	SS-031

Nominal values and limits from method 1.0 1.0E-4 20-105 150 180

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EERLINE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test TH Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	THISO IE PLATE AEA
	SPP-073	Soil Leaching 10-200 g Aliquot, rev 0
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES \pm 2 SD	MDA <u>390</u> \pm <u>530</u>
FOR 9 SAMPLES	YIELD <u>84</u> \pm <u>9</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNR

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test U Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
							1+3	2σ	2+3	2σ
Preparation batch 7131-147										
B1HK42	R605137-03		7446-003	18.1 U	U	18.1 U				
B1HK47	R605137-04		7446-004	10.1 U	U	U				
B1HK52	R605137-05		7446-005	U	21.6 U	U				
B1HL22	R605137-01		7446-001	8.88 U	U	U				
B1HL26	R605137-02		7446-002	U	U	U				
Method Blank	R605137-09		7446-009	U	U	U				
Lab Control Sample	R605137-08		7446-008	ok	ok	ok				
Duplicate (R605137-04)	R605137-10		7446-010	- U	- U	- U				
Nominal values and limits from method										
			RDLs (pCi/g)	1.0	1.0	1.0	100		4	
216Z9 Trnch.Slant Charact.Brhle-Soil										
Averages										

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MAX MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7131-147 2σ prep error 5.0 % Reference Lab Notebook 7131 pg. 147																
B1HK42	R605137-03		170	1.0E-4				76		942			63	06/14/06	06/15	SS-027
B1HK47	R605137-04		120	2.0E-4				67		943			70	06/14/06	06/15	SS-028
B1HK52	R605137-05		85	2.0E-4				78		938			72	06/14/06	06/15	SS-029
B1HL22	R605137-01		110	2.0E-4				80		962			70	06/14/06	06/15	SS-064
B1HL26	R605137-02		2.3	0.0100				58		962			43	06/14/06	06/15	SS-065
Method Blank	R605137-09		260	1.0E-4				48		943				06/14/06	06/15	SS-032
Lab Control Sample	R605137-08		1600	1.0E-4				93		943				06/14/06	06/15	SS-031
Duplicate (R605137-04)	R605137-10		120	2.0E-4				66		944			70	06/14/06	06/15	SS-034
Nominal values and limits from method																
			1.0	1.0E-4				20-105		100	100		180			

METHOD SUMMARIES

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Lab id EBERLINE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test U Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
	SPP-073	Soil Leaching 10-200 g Aliquot, rev 0
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES \pm 2 SD	MDA <u>310</u>	\pm <u>1100</u>
FOR 8 SAMPLES	YIELD <u>71</u>	\pm <u>28</u>

METHOD SUMMARIES

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test SR Matrix SOLID
SDG 7446
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Total Strontium
Preparation batch 7131-147				
BlHK42	R605137-03	7446-003		U
BlHK47	R605137-04	7446-004		U
BlHK52	R605137-05	7446-005		U
BlHK57	R605137-06	7446-006		U
BlHK77	R605137-07	7446-007		U
BlHL22	R605137-01	7446-001		U
Method Blank	R605137-09	7446-009	168	U
Lab Control Sample	R605137-08	7446-008	ok	
Duplicate (R605137-04)	R605137-10	7446-010	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0
216Z9 Trnch.Slant Charact.Brhle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP PAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7131-147 2σ prep error 10.0 % Reference Lab Notebook 7131 pg. 147																
BlHK42	R605137-03			2500	1.0E-4			91	100				61	06/13/06	06/13	GRB-228
BlHK47	R605137-04			1400	2.0E-4			93	100				68	06/13/06	06/13	GRB-229
BlHK52	R605137-05			1400	2.0E-4			90	100				70	06/13/06	06/13	GRB-231
BlHK57	R605137-06			2.8	0.100			86	100				56	06/13/06	06/13	GRB-232
BlHK77	R605137-07			28	0.0100			87	100				41	06/13/06	06/13	GRB-201
BlHL22	R605137-01			1400	2.0E-4			89	100				68	06/13/06	06/13	GRB-227
Method Blank	R605137-09			2700	1.0E-4			89	100					06/13/06	06/13	GRB-204
Lab Control Sample	R605137-08			2600	1.0E-4			87	100					06/13/06	06/13	GRB-202
Duplicate (R605137-04)	R605137-10			1100	2.0E-4			92	120				68	06/13/06	06/13	GRB-221

Nominal values and limits from method 1.0 1.0E-4 30-105 100 180

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test SR Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-073	Soil Leaching 10-200 g Aliquot, rev 0
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES \pm 2 SD	MDA <u>1500</u> \pm <u>2000</u>
FOR 9 SAMPLES	YIELD <u>89</u> \pm <u>5</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test TC Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Technetium 99
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Preparation batch 7131-128

BIHK42	R605137-03	7446-003	U
BIHK47	R605137-04	7446-004	U
BIHK52	R605137-05	7446-005	22.1
BIHK57	R605137-06	7446-006	U
BIHK77	R605137-07	7446-007	U
BIHL22	R605137-01	7446-001	U
Method Blank	R604004-04	7409-004	U
Lab Control Sample	R604004-03	7409-003	ok
Duplicate (R605137-04)	R605137-10	7446-010	- U

Nominal values and limits from method RDLs (pCi/g) 15

21629 Trach, Slant Charact. Brhle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7131-128 2σ prep error 10.0 % Reference Lab Notebook 7131 pg. 128

BIHK42	R605137-03	18	0.0241					87	100				63	06/07/06	06/15	GRB-225
BIHK47	R605137-04	26	0.0199					88	100				70	06/07/06	06/15	GRB-226
BIHK52	R605137-05	17	0.0322					94	50				69	06/07/06	06/12	GRB-221
BIHK57	R605137-06	2.8	0.200					90	50				55	06/07/06	06/12	GRB-222
BIHK77	R605137-07	4.6	0.150					73	50				41	06/07/06	06/13	GRB-202
BIHL22	R605137-01	26	0.0208					93	50				70	06/07/06	06/15	GRB-224
Method Blank	R604004-04	55	0.0100					92	50					06/07/06	06/10	GRB-224
Lab Control Sample	R604004-03	58	0.0100					90	50					06/07/06	06/10	GRB-223
Duplicate (R605137-04)	R605137-10	26	0.0214					91	50				67	06/07/06	06/12	GRB-224

Nominal values and limits from method 15 0.0100 20-105 50 180

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLINE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Test TC Matrix SOLID

SDG 7446

Contact Melissa C. Marnion

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	TC99_TR_SEP_GPC
SPP-062	Sample Aliquoting, rev 0	
CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES \pm 2 SD	MDA 26 \pm 39
FOR 9 SAMPLES	YIELD 89 \pm 13

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBERLINE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test GAM Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
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Preparation batch 7131-147

BLHK42	R605137-03	7446-003	U	0.396
BLHK47	R605137-04	7446-004	U	0.408
BLHK52	R605137-05	7446-005	U	0.325
BLHK57	R605137-06	7446-006	U	U
BLHK77	R605137-07	7446-007	U	U
BLHL22	R605137-01	7446-001	U	0.291
BLHL26	R605137-02	7446-002	U	U
Method Blank	R605137-09	7446-009	U	U
Lab Control Sample	R605137-08	7446-008	ok	ok
Duplicate (R605137-04)	R605137-11	7446-011	- U	ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
216Z9 Trnch.Slant Charact.Brhle-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PRRP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZRD	DETECTOR
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Preparation batch 7131-147 2% prep error 15.0 % Reference Lab Notebook 7131 pg. 147

BLHK42	R605137-03	120	130	30	57	05/19/06	06/09	JR,07,00
BLHK47	R605137-04	33	137	98	67	05/19/06	06/12	JR,02,00
BLHK52	R605137-05	41	116	98	69	05/19/06	06/12	JR,02,00
BLHK57	R605137-06	540	2.83	102	56	05/19/06	06/13	SP,03,00
BLHK77	R605137-07	400	3.80	105	42	05/19/06	06/14	SP,03,00
BLHL22	R605137-01	34	108	111	64	05/19/06	06/09	JR,02,00
BLHL26	R605137-02	380	4.21	108	42	05/19/06	06/14	SP,03,00
Method Blank	R605137-09	1700	2.00	106		05/19/06	06/09	JR,08,00
Lab Control Sample	R605137-08	9.0	2.00	116		05/19/06	06/19	JR,08,00
Duplicate (R605137-04)	R605137-11	32	137	111	69	05/19/06	06/14	JR,02,00

Nominal values and limits from method 0.050 2.00 100 180

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test GAM Matrix SOLID

SDG 7446

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H3417

PROCEDURES	REFERENCE	GAMMA_CS
	SPP-100	Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES \pm 2 SD	MDA <u>330</u> \pm <u>1000</u>
FOR 10 SAMPLES	YIELD _____ \pm _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 07/10/06

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3417

Test H Matrix SOLID
SDG 7446
Contact Melissa C. Marrison

METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H3417

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
Preparation batch 7131-147				
B1HK42	R605137-03	7446-003	U	
B1HK47	R605137-04	7446-004	U	
B1HK52	R605137-05	7446-005	U	
B1HK57	R605137-06	7446-006	U	
B1HK77	R605137-07	7446-007	U	
B1HL22	R605137-01	7446-001	U	
Method Blank	R605137-09	7446-009	U	
Lab Control Sample	R605137-08	7446-008	OK	
Duplicate (R605137-04)	R605137-10	7446-010	- U	
Nominal values and limits from method				
		RDLs (pCi/g)	400	
216Z9 Trnch.Slant Charact.Brhlle-Soil				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF min	COUNT keV	FWHM keV	DRIFT HRLD	DAYS PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7131-147 2σ prep error 10.0 % Reference Lab Notebook 7131 pg. 147															
B1HK42	R605137-03		14	0.0631			100		150			50	06/01/06	06/02	LSC-007
B1HK47	R605137-04		15	0.0605			100		150			57	06/01/06	06/02	LSC-007
B1HK52	R605137-05		17	0.0541			100		150			59	06/01/06	06/02	LSC-007
B1HK57	R605137-06		2.9	0.318			100		150			45	06/01/06	06/02	LSC-007
B1HK77	R605137-07		3.0	0.303			100		150			30	06/01/06	06/02	LSC-007
B1HL22	R605137-01		15	0.0629			100		150			57	06/01/06	06/02	LSC-007
Method Blank	R605137-09		15	0.0600			100		150				06/01/06	06/02	LSC-007
Lab Control Sample	R605137-08		32	0.0600			100		36				06/01/06	06/02	LSC-007
Duplicate (R605137-04)	R605137-10		15	0.0602			100		150			57	06/01/06	06/02	LSC-007
Nominal values and limits from method															
			400	0.0600					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 14 ± 17
FOR 9 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 17

SUMMARY DATA SECTION

Page 39

Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/10/06

00000043

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3417

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 40

Lab id EBERLINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

00000044

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 41

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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SUMMARY DATA SECTION

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Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3417

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3417

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 45

Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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SUMMARY DATA SECTION

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Lab id EBERLINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

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Client Hanford
Contract No. 630
Case no SDG_H3417

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3417

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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SUMMARY DATA SECTION

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Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3417

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3417

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3417

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3417

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3417

SDG 7446
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3417

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/10/06

00000058

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F06-005-040		PAGE 1 OF 1		
COLLECTOR Mokler/Pope/Pfister <i>(WIS)</i>		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N		
SAMPLING LOCATION C3427, Slant, I-18		PROJECT DESIGNATION 216-Z-9 Trench Slant Characterization Borehole - Soil		SAF NO. F06-005		AIR QUALITY <input type="checkbox"/>		DATA TURNAROUND 45 Days / 45 Days		
ICE CHEST NO.		FIELD LOGBOOK NO. HNF-N-360-1								
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO.				BILL OF LADING/AIR BILL NO.				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS <i>ITEM #1 - 337g</i>		PRESERVATION		None					
			TYPE OF CONTAINER		G/P					
			NO. OF CONTAINER(S)		1					
	SPECIAL HANDLING AND/OR STORAGE		VOLUME		250ml.					
			SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS					
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME				
B1HK42		SOIL		4/13/06		0915				
CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS (1)Gamma Spec - Radium {Radium-226, Radium-228} Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232} Neptunium-237; Tritium - H3; <i>DEPTH - 118.5' - 130.5'</i>		
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
<i>S. N. Mokler</i>		<i>4/13/06 1240</i>		<i>Site Ref 29</i>		<i>4/13/06 1240</i>				
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
<i>FED EX</i>				<i>Flex Release</i>		<i>5/16/06 10:30</i>				
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME				
LABORATORY SECTION		RECEIVED BY				TITLE				
FINAL SAMPLE DISPOSITION		DISPOSAL METHOD				DISPOSED BY				
						DATE/TIME				

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F06-005-040	PAGE 1	OF 1
COLLECTOR Mokler/Pope/Pfister		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION C3427, Slant, I-18		PROJECT DESIGNATION 216-Z-9 Trench Slant Characterization Borehole - Soil H3417 (7446)				SAF NO. F06-005		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. 0034050		FIELD LOGBOOK NO. HNF-N-360-1		COA 121618ES10		METHOD OF SHIPMENT FEDERAL EXPRESS				
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. Su RBR FJ008000				BILL OF LADING/AIR BILL NO. Su RBR FJ008000				
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Rad to BIHKCA		PRESERVATION None							
			TYPE OF CONTAINER G/P							
			NO. OF CONTAINER(S) 1							
			VOLUME 250mL							
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B1HK42	SOIL	4/13/06	0915 X							
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS				
RELINQUISHED BY/REMOVED FROM Z-S Site Friday		DATE/TIME 5/15/06 0940	RECEIVED BY/STORED IN M.A. Bucher M.G. Bucher		DATE/TIME 5/15/06 0940	(1)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Gamma Spec - Add-on {Antimony-125, Cesium-134} Americium-241; Isotopic Plutonium; Isotopic Uranium; Gamma Spec - Radium {Radium-226, Radium-228} Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium {Thorium-232} Neptunium-237; Tritium - H3;				
RELINQUISHED BY/REMOVED FROM M.A. Bucher M.G. Bucher		DATE/TIME 5/15/06 0940	RECEIVED BY/STORED IN Red EX		DATE/TIME 5/15/06 0940					
RELINQUISHED BY/REMOVED FROM RED EX		DATE/TIME	RECEIVED BY/STORED IN Jesse Kluwe		DATE/TIME 5/16/06 1030					
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	Original COC attached to document Chain of Possession				
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME					
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME					
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME					
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME					
LABORATORY SECTION	RECEIVED BY		TITLE		DATE/TIME					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY		DATE/TIME					



RICHMOND, CA LABORATORY **SAMPLE RECEIPT CHECKLIST**

Client: FLUOR HANFORD City RICHLAND State WA
 Date/Time received 5/16/06 10:30 CoC No. F-06-005-170, 063, 096, 090, 08, 164, 048
 Container I.D. No. 0034050 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [✓] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A [✓]
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A [✓]
5. Packing material is: Wet [] Dry [✓]
6. Number of samples in shipping container: 7 Sample Matrix SOIL
7. Number of containers per sample: _____ (Or see CoC F06-005)
8. Samples are in correct container Yes [✓] No []
9. Paperwork agrees with samples? Yes [✓] No []
10. Samples have: Tape [] Hazard labels [] Rad labels [✓] Appropriate sample labels [✓]
11. Samples are: In good condition [✓] Leaking [] Broken Container [] Missing []
12. Samples are: Preserved [] Not preserved [] pH _____ Preservative _____
13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes [] No [] Date _____
15. Inspected by AK Date: 5/16/06 Time: 12:50

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____
 Alpha Meter Ser. No. _____
 Beta/Gamma Meter Ser. No. _____

Calibration date _____
 Calibration date _____
 Calibration date _____